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# MILITARY BASES

## Navy's Planned Consolidation of RDT&E Activities



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The Honorable Robert C. Byrd  
Chairman, Committee on Appropriations  
United States Senate

The Honorable Jamie L. Whitten  
Chairman, Committee on Appropriations  
House of Representatives



The November 18, 1991, conference report on the Department of Defense's (DOD) fiscal year 1992 Appropriations Act required the General Accounting Office to study and report on DOD's plans to consolidate its defense research and development laboratories, with special emphasis on naval research, development, testing and evaluation; engineering; and fleet support activities. This interim report provides information on the Navy section cited in the conference report, addressing cost and savings data, personnel assumptions, duplication of research among the services, and RDT&E relative to the force structure.

We compared selected costs and savings estimates for the Navy laboratory consolidation plan submitted to the 1991 Base Closure and Realignment Commission in April 1991 to the costs and savings contained in the fiscal year 1993 budget estimates submitted to Congress in January 1992 (FY 1993 budget). Since new military construction and personnel reductions are the major cost and savings factors affecting a closure or realignment decision, we concentrated on those factors for this report. We will issue a report including information on the Air Force and Army consolidation plans in March 1993.

## Background

In April 1991, the Navy submitted to the 1991 Base Closure and Realignment Commission (BRAC) its plans to consolidate 36 of its existing research and development activities<sup>1</sup> into one basic research laboratory and four distinct warfare centers: Air, Surface, Undersea, and Command, Control, and Ocean Surveillance. Under the plan, 7 RDT&E activities would be closed and 17 others would be realigned. With the exception of one portion of the Navy Command, Control, and Ocean Surveillance Warfare Center, the Navy's plan was approved by BRAC and endorsed in September

<sup>1</sup>The Navy considered 36 Research, Development, Test, and Evaluation (RDT&E); fleet support; and engineering facilities. Throughout this report we refer to all of these activities as RDT&E activities.

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1991 by the Federal Advisory Commission on Consolidation and Conversion of Defense Research and Development Laboratories. DOD's total estimated cost to implement the closures and realignments was \$542 million, with a total annual savings of about \$115 million after implementation.

DOD directed the military services to use the Cost of Base Realignment Action (COBRA) model for estimating the costs, savings, and payback period related to closure and realignment actions for submission to BRAC. The model was used to estimate one-time closure and realignment costs, such as personnel and equipment moving expenses and new construction at other bases. The model also included one-time savings, such as construction costs that would be avoided altogether, and allowed for estimation of receipts such as land sale proceeds. Additionally, the model was used to estimate the annual recurring savings accrued by eliminating military and civilian personnel authorized positions and reducing base maintenance and overhead expenses. Following the estimation of costs and savings, the model calculated the payback period (the time in years from the completion of a base closure until a net payback would be achieved). We have generally endorsed the use of the model for base closure analyses but recognize its limitations and have made recommendations for improvements.<sup>2</sup> In October 1991, the Institute for Defense Analysis similarly endorsed the model as part of its review of laboratory realignment cost and savings estimates.

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## Results in Brief

In comparing the Navy's April 1991 estimates with the fiscal year 1993 budget estimates, we determined that the estimated cost of military construction for the Navy laboratory consolidation has not changed materially. We note, however, that the 1993 budget submission was not based on estimates derived from the COBRA model. Rather, the Navy used its regular budget process; therefore, the estimates are difficult to compare.

The difficulty in making comparisons was most pronounced in the area of personnel reductions. The April 1991 plan projected a reduction of 2,280 positions due to the consolidation of laboratories. The fiscal year 1993

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<sup>2</sup>Military Bases: An Analysis of the Commission's Realignment and Closure Recommendations (GAO/NSIAD 90-42, Nov. 29, 1989), Military Bases: Observations on the Analyses Supporting Proposed Closures and Realignments (GAO/NSIAD 91-224, May 15, 1991), and letter to the Assistant Secretary of Defense for Production and Logistics (B-234775, June 3, 1992).

budget request includes a reduction of 11,252 positions resulting from work load reductions and consolidation of research and development laboratories. We could not determine what portion of this reduction is specifically related to the consolidation. We analyzed costs related to personnel relocations and determined that the percentage of people relocating would not materially affect the overall costs of the consolidation.

Finally, DOD is taking steps to reduce duplication among the services in common research areas through the Tri-Service Science and Technology Reliance Program. If implemented as planned, this effort, coupled with the Navy's consolidation plan, should reduce duplication among the Navy's RDT&E activities.

We also examined the Navy's RDT&E budget and found no precise relationship to the force structure.

## Military Construction Costs

The cost of military construction associated with the consolidation of the Navy's laboratories has not changed substantially since the Navy submitted its estimates to the Base Closure Commission in April 1991. The total cost then was estimated to be \$270 million; the 1993 budget request projected a total cost of \$274.7 million. However, the 1993 figure was adjusted for inflation; the COBRA model figure was not. When we added inflation, the COBRA model estimate increased by \$25.1 million, for a total of \$295.1 million (see table 1).<sup>3</sup>

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<sup>3</sup>We could not precisely inflate the estimate because the COBRA model did not identify specific projects or a particular year in which construction would occur. Rather, COBRA apportioned construction costs across the years of the realignment based on the estimated number of personnel arriving at the receiving base in a particular year. As a result, the inflated costs are slightly high because most personnel would arrive at a new base in the later years of a relocation, and the military construction would be subjected to higher inflation indices.

**Table 1: Changes in The Cost of Military Construction Requirements**

Dollars in millions			
Warfare center	COBRA estimate	Fiscal year 1993 budget estimate	Difference
Air	\$133.1	\$122.2	(\$10.9)
Surface	102.1	95.6	(6.5)
Undersea	41.2	38.9	(2.3)
Command & Control	18.7	18.0	(0.7)
<b>Total</b>	<b>\$295.1</b>	<b>\$274.7</b>	<b>(\$20.4)</b>

We believe that the fiscal year 1993 budget requirements are valid based on discussions with officials and a review of justification documents at the three primary locations where construction will take place.<sup>4</sup> Construction at these locations accounts for \$208.7 million of the \$274.7 million in the budget request. The construction estimates assume space being made available at St. Inigoes, Maryland, resulting from a future BRAC realignment decision.

## Personnel Savings

Personnel savings included in the COBRA model data submitted to the Commission in April 1991 were based on the elimination of 2,280 positions because of the consolidation of similar functions. The COBRA model calculated recurring savings by multiplying a standard salary by an estimated number of positions to be eliminated. The fiscal year 1993 budget request projects the reduction of 11,252 positions from research and development laboratories. This reduction includes positions deleted because of work load reductions attributed to budget decreases, as well as the consolidation of the laboratories. We could not break down the reduction to determine the specific personnel reduction due to consolidation.

## Personnel Assumptions

In developing the April 1991 estimate, the Navy used standard factors to determine how many people would be available to move if their positions were to be relocated. For the most part, the Navy used the standard factors

<sup>4</sup>The three are the Dahlgren Division of the Surface Warfare Center, Dahlgren, Virginia; the Newport Division of the Undersea Warfare Center, Newport, Rhode Island; and the Aircraft Division of the Air Warfare Center, Lexington Park, Maryland.

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developed by the Air Force for use in a 1989 Logistics Management Institute study.<sup>5</sup> The Navy assumed that 53 percent of its employees would be willing to move (assuming that jobs would be available). The remainder was broken down by percentage as follows:

- 8.8 percent would be lost through normal attrition,
- 19.1 percent would retire early rather than move,
- 12.6 percent would quit working for the government, and
- 6.5 percent would be unwilling to move.

The COBRA model estimated costs, based on these percentages, for lump sum annual leave, retirement, severance, and unemployment payments associated with these losses. The model also estimated costs of severance and unemployment pay for employees who would be willing to move but for whom jobs would not be available.

The Navy's assumption that 6.5 percent of the people would be unwilling to relocate was one of the more contentious issues discussed during the base closure review process. To test the sensitivity of costs to this assumption, we asked the Navy to run the COBRA model for two situations with significantly different assumptions. We concluded from the results of this test that the impact on the cost of the percentage of people that would be unwilling to move is minimal.

First, we asked the Navy to determine the total personnel costs for a hypothetical realignment of 1,000 positions, assuming a \$2,000 new hire cost and a permanent change of station for all the positions that would be transferring to a new location. The personnel cost of this move was \$18.5 million. The Navy then ran the COBRA model assuming that 50 percent of its employees would be unwilling to move and that only 9.5 percent would relocate. The personnel cost of this move would be \$19.9 million, an increase of only \$1.4 million.

Second, the Navy ran the COBRA model for the Naval Air Development Center portion of the Naval Air Warfare Center consolidation, assuming that 40 percent of the personnel would be unwilling to relocate and 20 percent would move, as compared to the 53 percent originally estimated. The total cost of this move would be \$188.5 million versus the

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<sup>5</sup>COBRA: THE BASE CLOSURE COST MODEL (Logistics Management Institute Report PL809R1, May 1989).

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original \$184.2 million, and the payback period would increase from 14 to 15 years.

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## Duplication of Effort

The Navy's consolidation plan and the Tri-Service Science and Technology Reliance Program are aimed at reducing duplication of research and development work within the Navy and among the three military services.

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### Navy Consolidation Plan

According to the Navy's consolidation plan, the duplication of efforts ought to be eliminated as each warfare center assumes responsibility for a unique set of functions in one technical area or in specific leadership areas. According to Navy officials, RDT&E activities had previously competed for program funding and maintained similar capabilities. After approving the consolidation plan in April 1991, the Secretary of the Navy directed program managers to send new or additional in-house work to the activity assigned to take the lead in that area. Therefore, program managers will no longer be able to send work to any Navy RDT&E activity willing to perform that work.

The Navy is reorganizing the missions of each warfare center to ensure that similar work previously performed at several locations will be transferred to one assigned location. For example, according to the Navy's plan, the Undersea Warfare Center in Newport, Rhode Island, will be responsible for torpedo and torpedo countermeasure programs. Prior to consolidation, this work was performed at the Naval Underwater Systems Center in Newport, Rhode Island; the Naval Ocean Systems Center in San Diego, California; and the Naval Coastal Systems Center in Panama City, Florida.

In addition, the Naval Air Warfare Center's Aircraft Division is studying opportunities to eliminate duplication and increase the efficiency and effectiveness of its technical work. For example, the Aircraft Division established several teams to seek opportunities for integrating technical areas among its five sites: Trenton, New Jersey; Indianapolis, Indiana; Lakehurst, New Jersey; Warminster, Pennsylvania; and Patuxent River, Maryland. These teams consider (1) physically transferring functions to one location, (2) managing the work of several sites at one location, (3) transferring a function to another unit without physically transferring positions, (4) defining in memorandums of understanding related but nonoverlapping responsibilities within an area, and (5) maintaining the status quo.

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## Tri-Service Science and Technology Reliance Program

On November 25, 1991, the three services began implementing a science and technology reliance program to reduce redundant capabilities and eliminate duplication of effort in areas of mutual interest. Under this program, science and technology work may be jointly planned, consolidated at one location, or led by a single military service. The military services are to increase reliance efforts in 223 areas of technology: 28 broad areas (for example, conventional air/surface weaponry) and 195 subareas (for example, guidance and control).

DOD assigned responsibility for implementing and verifying compliance with program requirements to four tri-service groups:

- the Joint Directors of Laboratories, which will oversee reliance in 25 combat-related technology areas;
- the Armed Services Biomedical Research Evaluation and Management Committee, which will oversee reliance in medical technology;
- the Training and Personnel Systems Science and Technology Evaluation and Management Committee, which will manage reliance efforts in the manpower, personnel, and training areas; and
- the Joint Engineers, which will oversee reliance in civil engineering and environmental quality technology areas.

According to the Chief of Naval Research, the Navy plans to implement reliance agreements in fiscal year 1993.

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## RDT&E And the Force Structure

The Department of Defense is reducing and reshaping its military forces to adapt to changes in the strategic environment and the challenges of the post-Cold War era. Anticipated levels of defense funding during fiscal year 1992-97 and a reassessment of probable threats to the United States were key factors DOD used in developing its force structure plan. Under DOD's current plan, the size of the U.S. military will decrease by approximately 25 percent over the next 5 years. For example, the Army will have 6 fewer divisions, Navy battle-force ships will decline from 545 to 451, and the Air Force will have 9 fewer tactical fighter wings and 87 fewer strategic bombers.

The Defense Base Closure and Realignment Act requires DOD's base closure and realignment recommendations to ensure that a balance is maintained between the base structure and the force structure plan. For combat forces, this relationship is direct and relatively easy to define: as the number of planes or ships is reduced, there is a corresponding

reduction in the required base structure. For functions such as RDT&E, however, there is no precise relationship between force structure and the needed RDT&E base structure. Rather, the base structure required to support RDT&E is a function of the amount and type of RDT&E that is included in the budget.

In determining the level of RDT&E funding, the Navy must consider several factors, including the projected technological threat and the actions necessary to catch up or remain in front, the number of technologies that are represented in the current and projected inventory of required weapons systems, and historical data showing results from different investment levels in various RDT&E areas. The rise or fall in the RDT&E funding levels and basing requirements is more related to perceptions regarding those factors than to force structure. Table 2 shows past and current DOD budgets in relation to RDT&E funding.

**Table 2: Relation of Navy RDT&E Funding to Navy Total Obligational Authority (TOA)**

Year	Dollars in billions		Adjusted to 1992 dollars	
	Navy TOA	Navy RDT&E	RDT&E (percent)	
1970	\$96.2	\$9.7	10.1	
1971	76.5	7.8	10.2	
1972	81.5	8.2	10.1	
1973	80.7	8.1	10.0	
1974	73.8	7.5	10.2	
1975	66.6	7.3	11.0	
1976	69.4	7.3	10.5	
1977	76.7	8.0	10.4	
1978	77.1	7.9	10.3	
1979	74.1	7.9	10.7	
1980	76.1	7.4	9.7	
1981	84.8	7.5	8.8	
1982	96.5	8.2	8.5	
1983	106.9	8.3	7.8	
1984	105.3	10.0	9.5	
1985	117.8	11.4	9.7	
1986	115.8	11.7	10.1	
1987	113.5	11.7	10.1	
1988	118.3	11.0	9.3	
1989	108.7	10.3	9.5	
1990	108.1	10.2	9.4	

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## Scope and Methodology

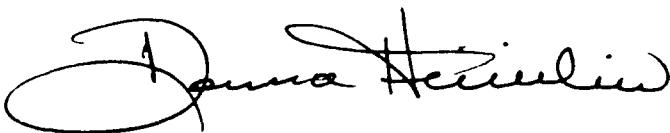
We interviewed officials and analyzed documents obtained from Navy officials at Navy headquarters and field activities of selected naval warfare centers. We focused on military construction and personnel reductions factors because we believe they are the major cost and savings factors affecting a realignment decision.

We performed our work between May and August 1992 in accordance with generally accepted government auditing standards. We did not obtain written agency comments on a draft of this report, but we discussed the findings with Navy program officials and have incorporated their comments where appropriate.

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Unless you publicly announce its contents earlier, we plan no further distribution of this report for 30 days. At that time we will send copies to the Chairmen of the Senate and House Committees on Armed Services, the Secretaries of Defense and the Navy, the Director of the Office of Management and Budget, and other interested parties. We will also make copies available to others on request.

Please contact me at (202) 275-8412 if you or your staff have any questions. Major contributors to this report were Robert L. Meyer, Assistant Director, and Raymond C. Cooksey, Senior Evaluator.



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